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5/ A machine for extracting solid residue to be found in suspension and/or in solution in fluid matter containing volatile substances, and in particular aqueous matter, the machine comprising:

- 5 a) a heat exchange wall (1) having a smooth and hot face (10) which is heated to a temperature that is high enough to cause the water and/or the other volatile substances contained in the matter to evaporate quickly, said wall being movable cyclically around a closed path;
- 10 b) feeder and applicator means (21, 2) for feeding and applying the matter to be treated onto said hot face at the beginning of the cycle in the form of a thin layer;
- 15 c) crushing means (3) suitable for encouraging crumbling and spreading of the layer of matter on said hot face (10); and
- 20 d) scraper means (4) operative at the end of the cycle to recover the solid residue (r) that has formed; the machine being characterized by the fact that
- 25 said feeder and applicator means (21, 2) are adapted to cause the matter (M) to expand greatly in volume and to give it the consistency of a foam immediately before it is applied, and to deposit said foam on the hot face (10) in the form of a thin layer.

25 6/ A machine according to claim 5, in which said hot face (10) is plane and horizontal, the machine being characterized by the fact that the means for expanding the volume of the matter comprise both a box (2) placed

30 over said hot face, the box being downwardly open and open on one side in the forward direction of advance of the moving wall, and feeder means (21) for feeding the matter to be treated into the box, said box defining a chamber in which the matter expands, the bottom of the

35 chamber being constituted by said moving hot face (10).

7/ A machine according to claim 6, characterized by the fact that the matter (M) is fed into the box (2) by means of a positive displacement pump (213) via an Archimedes' screw constituted by a brush (217) mounted to rotate in a feed duct (218).

8/ A machine according to claim 6 or claim 7, characterized by the fact that the box (2) has a top wall (20) whose bottom face (2000) is plane and horizontal and parallel to the hot face (10), said top wall being movable in a vertical direction so as to be capable of being lowered and pressed against said hot face (10) in order to clean it.

9/ A machine according to claims 7 and 8 taken in combination, characterized by the fact that it includes means (200, 201, 216, 214, 215; 28; 280) to cause said pump (213) to stop momentarily, and simultaneously to cause the top wall of the box (20) to be lowered and pressed against the hot face, and to do so in cyclical manner, with said top wall (20) being raised thereafter automatically by resilient return members (25).

10/ A machine according to any one of claims 6 to 9, characterized by the fact that the outline of said box (2) when seen from above is flared, with its opening (O) being directed in the forward direction of advance (R) of the moving wall (1), and matter being fed to the upstream portion of the box, in its narrow zone (29).

11/ A machine according to any one of claims 5 to 10, characterized by the fact that said crushing means (3) comprise at least one flexible sheet (32) which is pressed against the matter (M) by resilient means such as a spring blade (3).

12/ A machine according to claim 11, characterized by the fact that said flexible sheet (32) is driven with reciprocating motion of small amplitude (d).

5 13/ A machine according to claim 11 or claim 12, characterized by the fact that said flexible sheet (32) is made of polytetrafluoroethylene.

10 14/ A machine according to any one of claims 5 to 13, characterized by the fact that said scraper means (4) comprises a battery of scrapers (41a, 41b, 41c, 41d) working in cascade, driven with cyclical motion following substantially elliptical paths (t_a , t_b , t_c , t_d).

15 15/ A machine according to any one of claims 5 to 14, in which said heat exchange wall (1) is a rotary disk having a vertical axis (ZZ') with the top face (10) of the disk constituting said hot face, the machine being
20 characterized by the fact that said scrapers (41) are arranged to transfer the residue (r) progressively towards the outside of the disk and to cause it to drop into a vertical collector well (8).

25 16/ A machine according to claim 15, characterized by the fact that it includes an additional scraper (80) suitable for scraping the outside edge (11) of the disk.

30 17/ A machine according to claim 15, characterized by the fact that it includes a fixed circularly arcuate side panel (12) disposed beside the disk (1) immediately downstream from the means (2) for applying the matter (M) on the disk (1) and serving to prevent the foam from escaping outwards.

35 18/ A machine according to any one of claims 5 to 16, characterized by the fact that it includes means (5) for mechanically removing particles that remain stuck to said

hot face (10), said means being situated downstream from said scraper and recovery means (4) and upstream from the applicator means (2).

5 19/ A machine according to claim 18, characterized by the fact that said means (5) for removing the particles comprise a pick-up metal sheet (50) associated with at least one removal wormscrew (51).

10 20/ A machine according to claims 15 and 18 taken in combination, the machine being characterized by the fact that said particle removal means (5) are adapted to evacuate said particles towards the outside of the disk (1).

15 21/ A machine according to claim 15, comprising a set of identical horizontal disks (1) that are closely spaced apart on the same vertical axis, which disks rotate together about their axis (ZZ'), the machine being
20 characterized by the fact that it includes a heated annular collector track (7) disposed at the bottom of the machine, vertically beneath the edges of the disk (1).

22/ A machine according to claim 21, characterized by the
25 fact that it has a set of scrapers (71) turning synchronously with the set of disks in the collector track (7) and adapted to transfer particles that are to be found therein towards an evacuation hole (81) situated at the collector well (8).

30 23/ A machine according to claim 21 or claim 22, characterized by the fact that it has scrapers (440, 441) adapted to scrap off deposit adhering to the bottom faces (1') of the disks so that said deposit drops onto the top
35 faces (10) of the underlying disks (1) and/or into the collector track (7).

26/ A machine according to any one of claims 5 to 25,
characterized by the fact that it includes means (211,
212, 213) for washing said hot face (10) in hot water.